UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 WYNKOOP STREET
DENVER, CO 80202-1129
http://www.epa.gov/region8

DEC 19 2013

Ref: 8P-W-UIC

Ms. Jenifer S. Reece
City of Bozeman
Moore, O'Connell & Refling
P.O. Box 1288
Bozeman, Montana 59771

RE: CLASS V UIC PROGRAM
Rule Authorization: Aquifer Remediation Well
Bozeman Solvent Site
1601 West Main Street
Bozeman, Montana
EPA File #MT50000-10230

Dear Ms. Reece:

The U.S. Environmental Protection Agency's (EPA's), Region 8, Underground Injection Control (UIC) Program staff has reviewed the application that was submitted by you or on your behalf for the Class V aquifer remediation injection well(s) at the above referenced location. Based on our understanding of the proposed program and limited potential for groundwater contamination, we have determined that a permit is not necessary at this time. Therefore, your aquifer remediation injection well(s) is currently "authorized by rule" in accordance with Title 40 Code of Federal Regulations (40 CFR) Sections 144.24 and 144.84(a). This authorization is based on information provided in your application and is valid for:

> injections of food grade, emulsified vegetable oil injections into 8 nested wells with 2 injection points in each well in a manner as described in your application,

and is limited to the location(s) indicated in the application that we received on November 26, 2013.

All injection wells are regulated under the UIC Program in accordance with 40 CFR Parts 144 and 146, which have been promulgated under Part C of the Safe Drinking Water Act, 42 United States Code Sections 1421 through 1428. Your Class V injection well(s) is subject to periodic compliance inspections, which may include sampling and analysis of your fluids. Finally, be aware that under 40 CFR Sections144.12(c), (d), and (e), the EPA can require you to apply for a permit or close your injection well(s) under certain circumstances.

Please notify us if the potential for groundwater contamination increases. If you intend to change the proposed plan, please notify us in advance. Any changes in operating methods or any other conditions that may adversely impact groundwater MUST be approved in advance by the EPA. Failure to comply with the above requirements will result in violations of UIC regulations and possible enforcement actions and penalties.

Please be advised that this rule authorization, change in operations, pertains solely to the UIC Program and does NOT relieve you from satisfying any other federal, state, or local regulations that may apply.

Please complete and return the self-addressed, stamped postcard included with this letter. Please contact Howard Urband at 1-800-227-8917, extension 312-6135 or (303) 312-6135 if you have any questions or need more information. More information on the EPA Region 8 Class V program can also be found online at: http://www.epa.gov/region8/water/uic/r8cvprog.html.

Sincerely,

Douglas Minter
Acting Chief, UIC Unit
Office of Partnerships and Regulatory Assistance

Enclosure: Self-addressed, Stamped Postcard (please return with signature and date)

cc: Kate Fry
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

James Sullivan
Cardno ATC
917 1st Avenue, Suite 3
Billings, Montana 59101

Susan P. Phillips
CVS Pharmacy, Inc.
Mintz, Levin, Cohn, Ferris, Glovsky, and Popeo, P.C.
One Financial Center
Boston, Massachusetts 02111

Underground Injection Control Program

Certification of Receipt

I, Jenifer Reece (print name) am in receipt of the Environmental Protection Agency Underground Injection Control Class V disposal system Rule Authorization letter.

Bozeman solvent site MT50000-10230

Signature: Jennifer S Reece

Date: 12/30/13

Instructions: Within a week of the receipt of the rule authorization letter, please print your name, sign and date below, and return this self-addressed stamped postcard.

UIC Class V File						
UIC Permit #: MT50000-10230						
Permit	Inv Form	Inspec Report	Monitor Report	EPA Corresp	Operator Corresp	State Corresp
				X		

Concurrence Copy

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1601 West Main Street
Bozeman, Montana
EPA File #MT50000-10230

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Sincerely,

Douglas Minter
Acting Chief, UIC Unit
Office of Partnerships and Regulatory Assistance

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Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

James Sullivan
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917 1st Avenue, Suite 3
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Dennis Fotovec
8P-W-UIC
12/16/13

8P-W-UIC
12/18/13

8P-W-UIC
12/18/13

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Sincerely,

Douglas Minter
Acting Chief, UIC Unit
Office of Partnerships and Regulatory Assistance

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Kay Fry
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

James Sullivan
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Billings, Montana 59101

Susan P. Phillips
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One Financial Center
Boston, Massachusetts 02111

STATEMENT OF BASIS
Bozeman Solvent Site
Bozeman, Montana
Remedial Rule Authorization
MT50000-10230

Background

The Bozeman Solvent site is part of a Record of Decision (ROD) issued by the Montana Department of Environmental Quality for the ongoing remediation of perchloroethylene (PCE) contamination of groundwater. On behalf of Jenifer S. Reece of the City of Bozeman, Cardno ATC, has filed an application for a Rule Authorization to remediate the spill by injections of food-grade emulsified vegetable oil. The application was received on November 26, 2013. A ROD for this site was issued by the Montana Department of Environmental Quality. The exact time the spill occurred and the amount of the spills has not been determined.

Location

The site is located within the Hastings Shopping Center located at 1601 West Main Street in Bozeman. Figure 1 included with the application shows the site within the city of Bozeman and the controlled groundwater area boundary. Figure 5 shows the location of the groundwater monitoring well network and the groundwater remediation area.

Geology and Hydrology

The sediments underlying this site are composed primarily of silt and clay to a depth of 7 feet below ground surface (bgs). Site wide boring logs show alternating sequences of clay, silt, sand, and gravel deposits to a depth of 325 feet bgs. The average depth to groundwater across the site ranges from 4 to 25 feet bgs. Groundwater flows from south to north at an average gradient of 0.0109 feet/foot. The groundwater contour map is shown on figure 5.

Proposed Remedial Program

Cardno ATC proposes to install 8 nested injection wells in accordance with the Revised Bozeman Solvent Site Enhanced Bioremediation 100% Design Report. The injection well nest consists of 2 injection wells per nest. The 2 injection wells in each nest will be completed within a single boring. The upper injection well will be screened from approximately 15 to 30 feet bgs and the lower injection well will be screened from approximately 35 to 50 feet bgs. The injection wells will be constructed using 2-inch diameter Schedule 40 PVC with 0.040 factory slotted screen. Solid risers will also be constructed using Schedule 40 PVC pipe. The filter pack will consist of 8/12 silica sand. A minimum of five feet of bentonite will be placed between the 2 screened intervals. A minimum of 3 feet of bentonite will be above the uppermost filter pack.

The injection will consist of vegetable oil product emulsified with water obtained on site from the City of Bozeman per the manufacturer recommendations. Following each injection, a volume of chase water will be injected into each well to prevent biofouling in the injection well and filter pack. A total of 1,441 gallons of food grade vegetable oil will be used. Table 1 summarizes the estimated vegetable oil and chase water volumes needed based on historic PCE concentrations. A series of monitoring wells and vapor probes will be utilized to evaluate the performance of the injection, and a soil vapor extraction (SVE) system will be installed to remove volatile vapors potentially produced.

Other Water Users

The area surrounding the site and downgradient is a controlled groundwater area, as such all domestic water wells have been abandoned and water is now supplied by the City of Bozeman. This area extends approximately 3 miles downgradient of the site. The nearest surface water body is Gallatin River which is approximately 2 miles downgradient. See figure 1.

Recommendation

Since the proposed injections can be conducted without endangering human health or the environment, approval of this program as presented in the application is recommended.

Google

Address 1601 W Main St
Bozeman, Mt 59715

NOV 26 2013

Cardno ATC
Shaping the Future

917 1st Avenue North, Suite 3
Billings, Montana 59101
www.cardnoatc.com
406-259-1033
Fax: 406-259-1099

November 21, 2013

UIC Class V File						
UIC Permit #: MT 50000-10230						
Permit	Inv Form	Inspec Report	Monitor Report	EPA Corresp	Operator Corresp	State Corresp
					X	

Mr. Craig Boomgaard
United State Environmental Protection Agency, Region 8
Underground Injection Control Program
Mail Code 8P-W-GW
1595 Wincoop Street
Denver, Colorado 80202

Subject: **Underground Injection Control Program**
Enhanced Bioremediation Injection
Bozeman Solvent Site
Bozeman, Montana

Dear Mr. Boomgaard,

On behalf of the City of Bozeman and CVS Pharmacy, Inc., Cardno ATC (Cardno) has prepared this notification letter and appended a summary table and figures for an enhanced bioremediation (EB) system at the Bozeman Solvent Site (BSS), located in Bozeman, Montana, in accordance with the Record of Decision (ROD) issued by the Montana Department of Environmental Quality (MDEQ) in August 2011. The location of the BSS is shown on appended Figure 1. The Bozeman Solvent Site is under remediation to address historic releases of the chlorinated solvent tetrachloroethylene, also known as perchloroethylene (PCE), to soil and, subsequently, groundwater, as well as its daughter products. The release was discovered in 1989. The design for EB that is to be applied to portions of the former Buttrey Shopping Center (BSC; now commonly known as the Hastings Shopping Center) located at 1601 West Main Street in Bozeman, Montana includes the injection of a food-grade, emulsified vegetable oil (EVO) product into the aquifer to stimulate anaerobic degradation of PCE through reductive dechlorination. The approximate extent of groundwater contamination exceeding clean-up standards, as well as recent analytical results, are shown on appended Figure 8, take from Revised Bozeman Solvent Site Enhanced Bioremediation 100% Design Report.

Project Organization

Following are key personnel involved in design and implementation of EB at the BSC.

Regulatory Agency - MDEQ

Ms. Kate Fry
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901
(406) 841-5066

Responsible Parties (RP) Contacts:

City of Bozeman
c/o Ms. Jenifer S. Reece
Moore, O'Connell & Refling
P.O. Box 1288
Bozeman, MT 59771

CVS Pharmacy, Inc.
c/o Ms. Susan P. Phillips
Mintz, Levin, Cohn, Ferris, Glovsky, and Popeo, P.C.
One Financial Center
Boston, MA 02111

Site Geology and Hydrogeology

The ground surface throughout the BSS generally consists of a silt/clay unit which ranges in thickness from 4 to 7 feet below ground surface (ft. bgs). Site-wide boring logs show alternating sequences of clay, silt, sand and gravel deposits below the ground surface unit to a depth of about 325 ft. Well logs indicate a trend toward units containing higher percentages of fine grained sediments with depth. Based on an evaluation of groundwater levels and flow characteristics, the nature of these alluvial deposits has been characterized as "uniformly heterogeneous".

At the BSC, the upper silt/clay unit is prevalent in the northeast area of the site on the east and behind the north leg of the building, and overlies generally coarse alluvium. Well logs indicate a clay or gravelly clay layer in the area adjacent to the retail space formerly occupied by CVS Pharmacy extending from approximately 4 to 7 ft. bgs, under which lie gravels and cobbles. Based on historic site monitoring well logs, this upper silt/clay layer tends to pinch out toward the west.

Groundwater flows from south to north at an average gradient of about 0.0109 feet/foot on the south side of the East Gallatin River. Groundwater elevations vary both spatially and seasonally across the site, with depth to groundwater typically ranging between approximately 4 and 25 ft. bgs across the site.

Summary of Proposed Scope of Work

Cardno has prepared, with MDEQ approval, a Revised Bozeman Solvent Site Enhanced Bioremediation 100% Design Report. To achieve optimal remediation results, a series of eight injection well nests will be installed, with two injection wells per nest. The layout of the EB injection wells is shown on the appended Figure 5, which is taken from Cardno's Revised Enhanced Bioremediation 100% Design Report. The two injection wells in each nest will be completed within a single boring and will be stratified such that the upper injection well is screened from approximately 15 to 30 ft. bgs and the deeper injection well is screened from approximately 35 to 50 ft. bgs. The injection wells will be constructed using two-inch diameter Schedule 40 polyvinyl chloride (PVC) with 0.040 factory slotted screen. Solid riser will likewise consist of Schedule 40 PVC. Filter pack will consist of 8/12 silica sand. A minimum of five feet of bentonite will be placed between the two screened intervals to prevent short-circuiting of the EVO. A minimum of three feet of bentonite will be placed above the upper-most filter pack, atop which a bentonite/grout mixture will be used to seal the boring to ground surface.

The concentrated EVO product will be emulsified on-site using potable water obtained from the City of Bozeman municipal supply at an oil:water ratio of 6:94 per manufacturer recommendations. Following each EVO injection, a volume of chase water, to be obtained from the City of Bozeman municipal supply, will be injected into in each well to prevent biofouling in the injection well and filter pack. Table 1 summarizes the estimated EVO and chase water injection volumes, based on historic PCE concentrations and, for the upper injection well in each nest, groundwater elevations. The actual volume of EVO and chase water to be injected into the upper injection wells will depend on the groundwater elevation at the time of injection.

A series of monitoring wells and soil vapor probes will be utilized to evaluate the performance of the EB, and a soil vapor extraction (SVE) system will be installed to remove volatile vapors potentially produced. This monitoring system will allow adequate assessment of the EB remedy to determine whether additional EVO injections are required to achieve the remediation goals.

Installation of the EB injection wells is scheduled to begin the week of December 16, 2013. Following development of the injection wells, the EVO injection is scheduled to begin the week of January 20, 2014.

Please contact me at (406) 259-1033 with any questions.

Sincerely,

Cardno ATC

James Sullivan
Project Manager

Attachments: Table 1 - Enhanced Bioremediation Injection Summary
Figure 1 - Site Vicinity Map
Figure 5 - Enhanced Bioremediation Infrastructure Layout
Figure 8 – June 2013 Potentiometric Map

TABLE

Table 1
Enhanced Bioremediation Injection Summary
Bozeman Solvent Site
Bozeman, Montana

EB Injection Well Nest	Injection Well Interval	Screen Interval (ft. bgs)	Estimate Volume of Vegetable Oil to be Injected per Well Interval (gallons)	Volume of EVO to be Injected per Well Interval Based on 6% Vegetable Oil (gallons)	Estimated Volume of Chase Water to be Injected per Well Interval (gallons)
EBI-1	EBI-1A	15-30	67	1116	939
	EBI-1B	35-50	105	1750	1,409
EBI-2	EBI-2A	15-30	80	1333	939
	EBI-2B	35-50	119	1983	1,409
EBI-3	EBI-3A	15-30	76	1266	939
	EBI-3B	35-50	118	1966	1,409
EBI-4	EBI-4A	15-30	67	1116	939
	EBI-4B	35-50	112	1867	1,409
EBI-5	EBI-5A	15-30	68	1133	939
	EBI-5B	35-50	113	1883	1,409
EBI-6	EBI-6A	15-30	70	1166	939
	EBI-6B	35-50	102	1700	1,409
EBI-7	EBI-7A	15-30	70	1166	939
	EBI-7B	35-50	102	1700	1,409
EBI-8	EBI-8A	15-30	70	1166	939
	EBI-8B	35-50	102	1700	1,409
TOTALS:			**1,441**	**24,011**	**18,784**

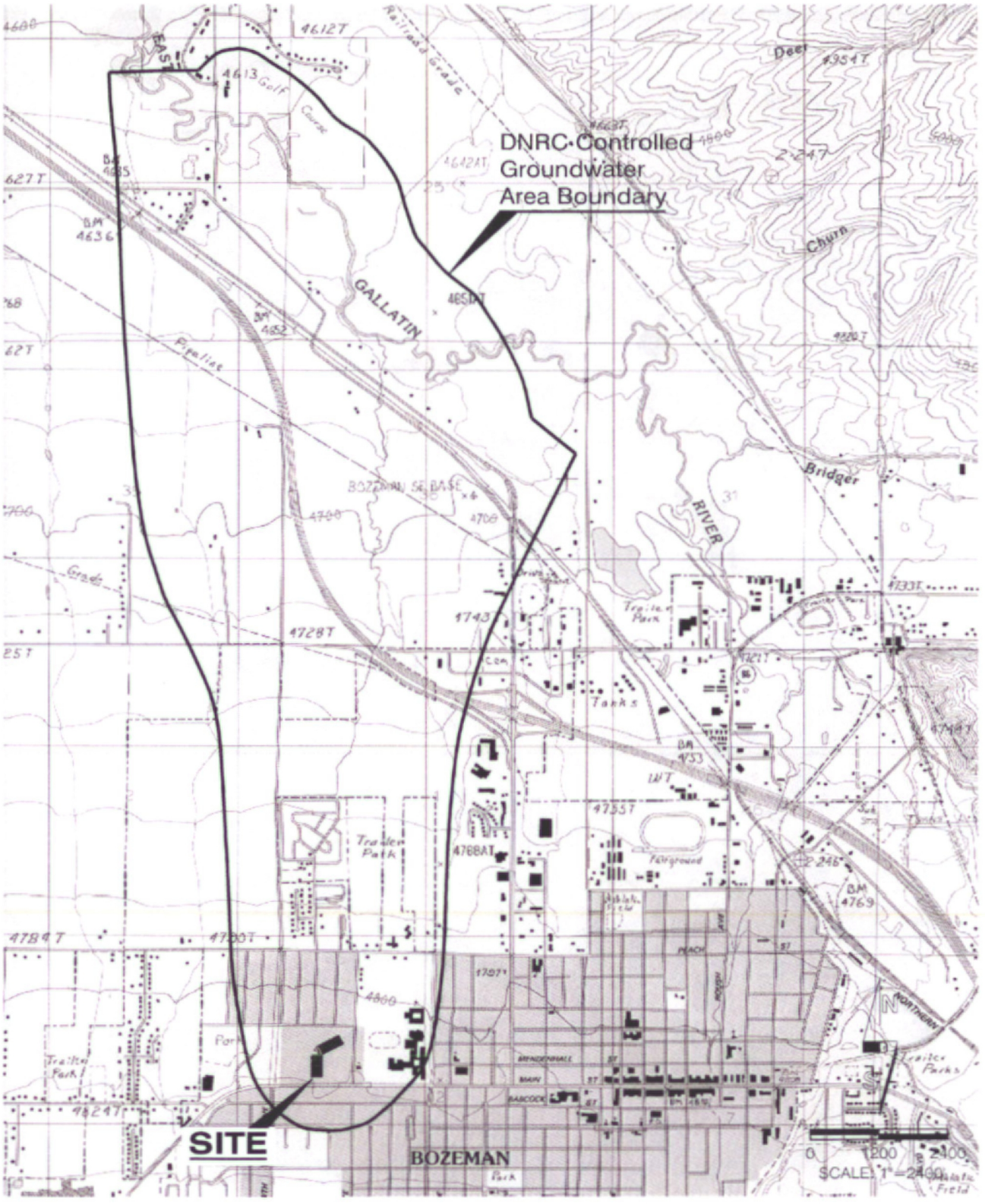
Notes:

EVO - Emulsified Vegetable Oil

6% vegetable oil to 94% water is recommended by manufacturer.

Volumes of EVO and chase water to be injected into the upper well interval in each nest is dependant on the groundater elevation at the time of injection.

FIGURES



From USGS 7.5' Bozeman Quad

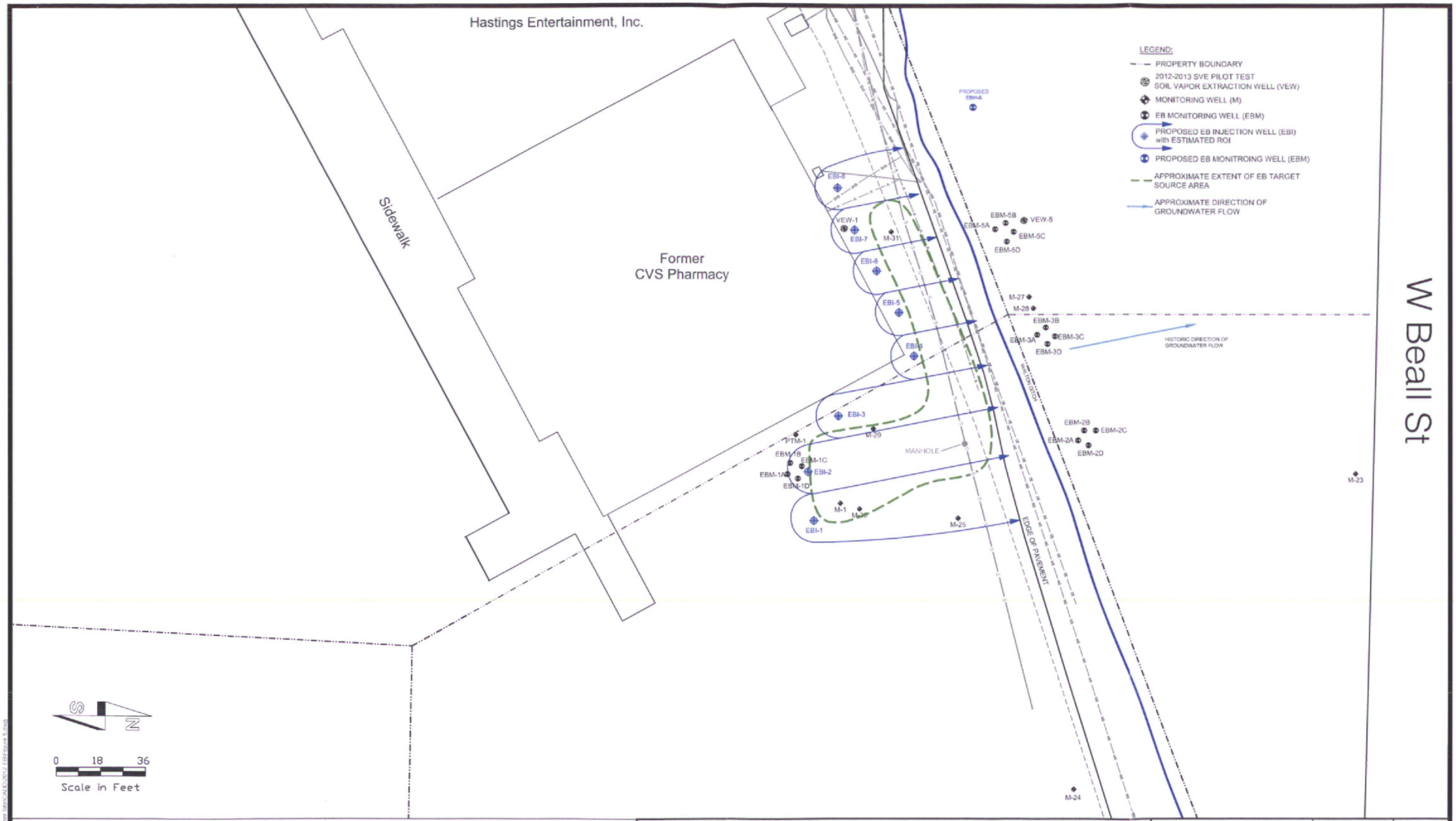
LOCATION MAP
EB 100% DESIGN REPORT
BOZEMAN SOLVENT SITE

BOZEMAN, MT

PROJECT NUMBER:	DATE: 09/10/2013	FIGURE
APPROVED BY: JS	DRAWN BY: JHC	1

Cardno ATC
917 1st Avenue North
Billings, Montana 59101-2048
Ph: (406) 259-1033 *** Fax: (406) 259-1099

S:\Projects\Bozeman Solvent Site\CADD\2012 EB\Figure 1.dwg



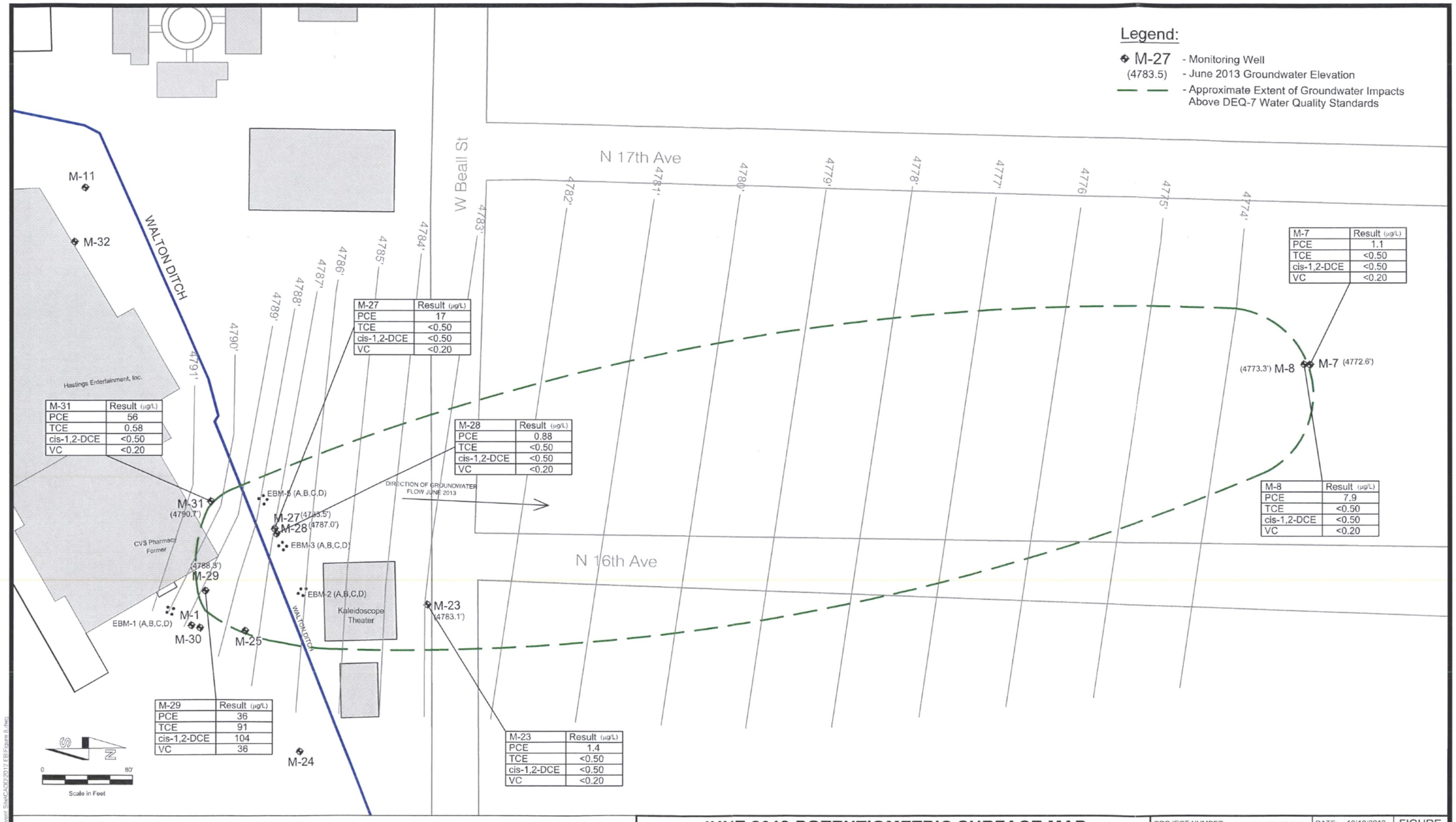
EB INFRASRUCTURE LAYOUT
EB 100% DESIGN REPORT
BOZEMAN SOLVENT SITE

BOZEMAN, MT

PROJECT NUMBER: 051.17875.0001 & 051.37515.0001	DATE: 10/23/2013	FIGURE
APPROVED BY: JS	DRAWN BY: JHC	5

Cardno ATC
917 1st Avenue North
Billings, Montana 59101-2048
Ph: (406) 259-1033 *** Fax: (406) 259-1099

S:\Projects\Bozeman Solvent Site\CAD\2013 EB\Figure 5.dgn



S:\Projects\Bozeman Solvent Site\CAD\2013 FEB\Figure 8.dwg

JUNE 2013 POTENTIOMETRIC SURFACE MAP
EB 100% DESIGN REPORT
BOZEMAN SOLVENT SITE

BOZEMAN, MT

PROJECT NUMBER: 051.17875.0001 & 051.37518.0001		DATE: 10/18/2013	FIGURE
APPROVED BY: JS		DRAWN BY: JHC	8

Cardno ATC 917 1st Avenue North
Billings, Montana 59101-2048
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